Mr. H. H. Wilson,—

Yes. One might think that there was dirt in the oil or that the bearings were set up too tight. I wish to know how can we have proof that the oil is worn out or not.

Prof. Bain,—

That problem, I think, I should tackle in this way. If you were satisfied that the oil is clean, you can therefore dismiss that point from mind. Then you next find out whether the oil is acid or not, but this is rather difficult for you to determine yourself. I might suggest that if you go to the Central Electric Co., and buy a pipette and fill it with oil, and after taking the temperature of same, hold the pipette up, allowing the oil to flow out, then note the number of seconds it requires for the oil to drain. If the oil has been in use for sometime, make the test again, and if the oil has been kept in good condition, the number of seconds should be almost the same. That is, the viscosity of the oil should be the same. By the way, I would advise you, in the start, not to make one test only, but make two or three, as you will find slight variations.

There is another thing which I forgot to show you. It is a modernization of the flash point apparatus, and is now the standard on the German railroads. Everything is done with this machine in a mechanical operation, and there is less likelihood of variation in the results as by the other methods.

(Apparatus described).

By this means it is easy to get the flash point, but by other methods the flash points may vary somewhat.

Mr. A. J. Lewkoweiz,—

There is often difficulty in getting oils to properly lubricate thrust bearings. An emulsion of oil and water has been successfully used, where the oil alone failed.

Professor Bain,—

In that case, of course, we could hardly examine the viscosity of such a mixture. Such cases in ordinary practice, are somewhat of an exception. Probably the best scheme for lubricating bearings is in use at Niagara Falls in the turbines; that is, of forcing the oil in. Mineral oil for low pressure gives the best results, and vegetable and animal oils for heavy pressures give the best results. Complete examination of an oil can probably be best carried out by making an actual test of the oil on a bearing. So much data has been collected that it is easy for one to decide whether a certain lubricant is desirable for a purpose or not. If anyone is interested in this subject, there is an interesting book edited by Mr. Gill, The Analysis of Oils. He gives you a description